The Influence of Support Size in Reproducing Kernel Element Method

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Abstract

In this part of the work, the influence of support size in Reproducing Kernel Element Method (RKEM) is presented with emphasis on the following two aspects: (1) Theoretically, in RKEM, there is no restriction on how to choose the support size for evaluation points. We recommended choosing a support size near the boundary such that the global function owns the Kronecker Delta property, whereas in the interior the optimal support size is assigned to obtain an optimal convergent rate. (2) RKEM combines the strength of both finite element methods and meshfree methods. By changing support sizes we can consequently obtain the discontinuity in the derivative of a global function in a specific region. This feature is required when dealing with problems involving bimaterial, moving interfaces or other discontinuities. In such cases, RKEM shows a great promise. Numerical results in one- and two-dimensional problems are demonstrated to illustrate the effectiveness of the proposed method.

Reference:

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